DOCUMENT RESUME

ED 433 777 HE 032 327

AUTHOR	Inkster, B. Keith
TITLE	Education after University: Degree Graduates in Vocational Programs. AIR 1999 Annual Forum Paper.
PUB DATE	1999-06-00
NOTE	24p.; Paper presented at the Annual Forum of the Association for Institutional Research (39th, Seattle, WA, May 30-June 3, 1999).
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*College Graduates; *College Outcomes Assessment; Employment Opportunities; Foreign Countries; *Graduate Surveys; Postsecondary Education; Salaries; Student Attitudes; *Technical Education; Vocational Education
IDENTIFIERS	*AIR Forum; *British Columbia

ABSTRACT

This study compared completers of a postsecondary technology program in British Columbia based upon whether they had a university degree prior to entering the applied two-year technology training program. Program completers (n=1,053) were surveyed one year after completion and included nearly 300 university graduates. Subjects had also been surveyed on entering the program concerning previous postsecondary education, previous employment, and views on work and education. Analysis of survey responses found no significant differences between the two groups on such factors as "time to find job," "hours of work week," and "monthly salary". Only "age" was significantly different, a finding explained by the generally older age of those with prior university degrees. Degree holders, however, valued their university experience highly. (Contains 25 references and 4 tables.) (DB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 433 777

EDUCATION AFTER UNIVERSITY: DEGREE GRADUATES IN VOCATIONAL PROGRAMS

by

B. Keith Inkster

Manager of Institutional Analysis and SimTech

British Columbia Institute of Technology

3700 Willingdon Avenue

Burnaby, British Columbia, Canada

V5G 3H2

Area Code 604, 412 7644

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
✓ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY
D. Vura
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

HE 032 327

AIR
for Management Research, Policy Analysis, and Planning

This paper was presented at the Thirty-Ninth Annual Forum of the Association for Institutional Research held in Seattle, Washington, May 30-June 3, 1999.
This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of AIR Forum Papers.

Dolores Vura
Editor
Air Forum Publications

Education After University: Degree Graduates in Vocational Programs

Abstract

The paper reviews the results of an earlier investigation of university graduates reversing the traditional flow of education by later acquiring a technical education, and examines whether their outcomes after graduation are different from those who have non-degree educational backgrounds. The analysis examines the potential relationship between university and technical education while the transition to a knowledge-based economy is underway. The findings show there are no differences in technology program outcomes based on educational background. Technology graduates have leveled their educational backgrounds and have sought and gained employment at all educational skill level categories. For some, 'reverse transfer' and multiple educational credentials were needed to successfully challenge the job market for a career.

Education After University: Degree Graduates in Vocational Programs

Introduction

Technology degrees are new to British Columbia. Since January 1995, legislation permits selected post-secondary institutions in the non-university sector to grant degrees. This removes the degree granting monopoly from the universities while legalizing a trend to place more emphasis on applied education. Practice-based applied education, now formally on par with traditional academic education, confers a new and unprecedented level of legitimacy on applied education and on the institution offering such knowledge. The expanding knowledge based economy, globalization, demographic shifts, increased international competition and rapid technological changes are creating labour market opportunities that require different qualifications and skills. In the Province of British Columbia (BC), there is concern that the present education is not producing a workforce with knowledge and skills appropriate to current needs. Higher education is being called on to equip its graduates with theoretical knowledge and practical competencies (McArthur, 1997).

Over the last two decades, Canada and other Western countries have experienced a structural shift away from primary industry and traditional occupations to service and knowledge-based industries. New skills are needed combining technical expertise, teamwork, reasoning and communication (Ashton & Lowe, 1981).

To meet the increasing skill needs of BC employers and to capitalize on the new legitimacy of practice-based education, a significant restructuring has taken place in the BC post-secondary education system. Earlier studies focused on the need for greater access, resulting in restructuring and expansion of the system (British Columbia: 1988 and 1992, cited in Dennison, 1995). In the results of a survey of students and employers (British Columbia, 1992b), career preparation was the highest student concern. Employers indicated preferences for graduates from

applied rather than academic programs, and for employees with good communication and organizational skills. In 1995, a policy advisory report by the BC Labour Force Development Board examined future skill needs and recommended training priorities for the BC government. It emphasized skill training over academic-based education, and became the basis of the strategic plan for the BC Ministry of Education, Charting a New Course (1996), which downplays the importance of academic studies. Instead, it emphasizes skill-based education along with basic comprehension, communication, and reasoning skills to meet perceived labor market requirements until the year 2006.

This study builds on an earlier investigation of survey results administered to the 1995 cohort of students entering full time two-year technology programs at a provincial technology institution (Inkster, 1997). The current examination of data analyzes a subset of the results of an annual province-wide, government sponsored telephone survey, administered to non-university post secondary completers approximately one-year after program completion. The 1998 telephone survey produced data that includes the subset of the completers of the same institution's technology programs in 1997, generally identified as those of the 1995 entering cohort. It should be noted that this institution is uniquely identified in the province with a mandate to offer technology education to the whole of the province (state-wide), whereas colleges assume a more local and regional role. As a consequence of this broader mandate, the results of this analysis are less those of that institution and more of the province or state, so they can be applied more generally beyond British Columbia.

Purpose

Why do university graduates reverse the traditional educational flow by acquiring a technical education? Are their outcomes different from those who have differing educational backgrounds? The enquiry is important for three reasons. First, the work advances studies of lifelong learning. Second, it adds to the field of

research by studying university graduates who are choosing a less traditional pattern of education. Third, it looks into some of the key outcome values of a technical education while the transition to a knowledge-based economy is underway. The analysis examines the potential relationship between university education and technical education.

Research Question

Nearly 300 university graduates chose to continue their education in a technology program at one Canadian technology institution in 1995. In the perceived hierarchy of post-secondary education, these students reversed the traditional flow of acquiring higher level degrees and instead, took an applied, two-year, technology diploma program. It is of considerable interest to administrators and program planners that 14% of the new registrants in technical programs held degrees. How different are these university graduates from technology programs compared to students in the same programs with other educational backgrounds? The main question being examined is what are the outcome advantages for degree-holding graduates to 'reverse transfer' and acquire a practice-based, technical education? Secondly, do other technical education students compare favorably?

Hypothesis

Reviewing a number of outcomes measures collected in the 1997 BC Provincial Outcomes Survey, it is hypothesized that there is no practical difference between selected outcomes for completers of two-year technology programs based on their previous educational background. The survey questions were structured to elicit information from the perspective of the students. Silver and Silver (1997) point out that "a great deal of research that sounds as though it is about students is not about students at all" (p.1). This study is the students' views.

Literature Review

Why do university graduates choose a technical institute to further their education? The dilemma posed by reviewing related literature is that it may not be sufficient to create a detailed understanding of the problem.

Student Flow in Post Secondary Education

The flow of students through an education system is depicted in a number of ways. The most common is the 'pipeline' where students flow from one level of education to another, suggesting a linear flow from high school to university, and on to undergraduate, graduate and post-graduate studies. The linear flow image is reported by Vaala (1993). In addition, Hilton & Lee (1988) and Rendon & Nora (1988) refer to the pipeline metaphor.

It is the effort to metaphorically represent linear student flow that generates the term 'reverse transfer'. Studies of reverse transfer have been reported from the mid-1960s (Fischer, 1975), and the term is still in use in the1990s. In 1979, Rooth conducted a study of reverse transfer students at Northampton County Area Community College because "reverse transfer is rapidly becoming one of the most common types of student movement between institutions of higher education" (p. 2). Of the total population of the college, nearly 16% (659) were identified as reverse transfer students. Most were attending college part-time, few had experienced any academic difficulty, nearly half had a bachelor's degree, and most changed their major from an academic to an occupational field. Reverse transfer was becoming an acknowledged pattern of learning (Clark, 1960).

In the Rooth study, 44% held a bachelor's degree, and most had switched from an academic to an occupational field. Temple (1978) cited by Rooth (1979), suggests "as liberal arts, humanities and social science majors find it increasingly

difficult to obtain employment, these students will turn to community colleges so that their previously acquired skills can ... be applied to an occupational area with better job prospects" (p. 9). Although 61% of degree holders were employed, Rooth speculated that "the students with degrees are trying to add a practical dimension to their existing field of expertise" (p. 31).

Mitchell (1984) conducted a comparative survey study of new, lateral and reverse transfer students and over 10,000 students responded to the survey, 20% of whom had reverse transferred and 55% who were new students.

> Although the literature on the 'reverse' and 'lateral' transfer student has not been extensive, these special groups of students have been recognized to be growing in numbers. [They] are older, ... enrolled for multiple reasons, many of them occupationally-related. Their reasons for leaving and attending are often related to changes in their personal or work lives rather than to academic concerns. (p. 1)

The factor of occupational destination is confirmed by Renkiewicz et al. (1982) who report "the four-year graduate appears to be attending the community college primarily for occupationally related reasons. [They] are more likely to have focused objectives primarily related to their occupation ..." (p. 42)

Labor Market.

Technology is changing how business and industry function, and what skills are needed to become, or stay, competitive for jobs. The 1996 Training for Whom (TFWh) document points out that the old ways of doing business are no longer an

option. Jobs have concentrated in the service sectors of the economy where changes in information services emphasize a shift away from lower skilled data processing occupations to higher skilled knowledge using and interpreting positions.

Job market changes require the support of a flexible learning system that can be adapted when necessary for new or emerging requirements. This includes short, easily accessible and high quality mixes of theory and application for traditional entry level students, that are adaptable for re-training and skill upgrading needs of mature students (Foot, 1996). "The main thrust is continual learning and flexibility in training to reflect current and future market demand" (TFWh, p. 31). In the post-industrial society, achieving a degree is not likely to guarantee economic freedom and social distinction.

Design and Methodology

Two surveys were administered to the 1995-entering cohort of the provincially mandated institute of technology. The focus of the 1995 survey was to collect information relating to previous post-secondary education and previous employment, together with views on work and education. The second was a telephone survey administered in 1998 by the provincial government to gather outcomes data from college and institute completers in British Columbia.

Survey Design

First Survey, Fall 1995. The survey administered by the institution comprised four sections: (1) Planned Education, (2) Employment, (3) Education, and (4) Background. It was administered to all first-year students attending a registration and orientation on the first day of the Fall term, traditionally the major intake term for

technology programs. There were 1,920 respondents to the survey, of whom 14% indicated they had earned degree credentials.

Second Survey, Spring 1998. For more than 10 years, an Outcomes survey has been conducted under the auspices of the provincial government. Each year approximately 15,000 students throughout British Columbia who have completed all or a substantial amount of their non-university post secondary education are interviewed by telephone. In this study the outcomes of 1053 of the graduates from one technology institution were examined. Most would have started their studies as the 1995-entering cohort that was initially surveyed on entry in 1995.

Methodology

The 1995 Entering Student Survey examined a broad spectrum of questions relating to planned education, employment, educational background, objectives, program choice and career planning. Inkster provided a comprehensive analysis of those who entered with a university degree (1997).

Data from the 1998 Outcomes survey use previous educational background to create an intake category variable. Achievement of enrolment goals, relatedness and usefulness of education and training, salary, time to find job, age, and hours of work are examined by intake category.

Findings

The focus of this enquiry is those students who have attained a university degree before embarking on a program of technological studies, and how the selected outcomes compare to other technology graduates.

Table 1 summarizes the university degree sub-population surveyed in 1995. No comparative data are available for those whose educational background on entrance was other than a university degree.

Table 1. Descriptive values of reverse transfer university graduates in technology education

Age	Median = 25 yrs	Range 25-60 yrs
Income	Appx $20,000 yr	
Year Previous to Enrolment	Working = 41%	University = 30%
Years Out of High School	Median = 7 yrs	Range 0-30 yrs
Parents Post Secondary Background	Male 54%	Female 43 %
Work Experience (previous job)	Essential 48%	Not Essential 44%
Previous Education Skills	Used 51%	Not Used 46%
Job Satisfaction (previous job)	Satisfied 52%	Not Satisfied 46%
Satisfaction with Wages (previous job)	Satisfied 50%	Not Satisfied 48%
Chose Right Technology Program	Right Choice 65%	
Make Same Educational Choices Again	Same Choice 62%	

In Table 1, the reverse transfer university graduate appears to closely match the findings cited in the literature. In the jargon of Brown and Scase (1994), their cultural capital is improved.

Table 2 illustrates the same 1995 respondents views on work and education. When related to employment and self-improvement, these responses indicate a high degree of agreement with the need for higher levels education. The responses also indicate a lesser agreement with the value or need of a university education. It should be noted that even though some of the reverse transfer university students disagreed with aspects of their education at university, most views were positive.

Table 2. Reverse transfer university graduates views on work and education upon entering technology studies.

	Agree	Disagree
It is important for me to improve myself generally	99%	1%
These days, people require higher levels of education than they did in the past	97%	3%
It is important that my education improve my chances of earning a good income	95%	4%
It is important that my job be related to my field of study or specialization	91%	8%
So far, my education has provided me with an opportunity to improve myself generally	91%	7%
To attain the lifestyle I want, I must have a university degree	67%	32%
My education has provided me with skills needed for a practical occupation	60%	34%
So far, my education has provided me with improved chances to earn a good income	56%	37%
I need a university degree to earn a decent income	55%	42%

Samples of open-ended comments :

My university education was invaluable ... I hope to receive an education that will provide me with specialized training/study in a particular field. (B.A. Grad)

My B.A. will provide me with a 'base' to build on for the future. But my research ... indicates that a solid technical and practical education is what I need to succeed in the field. (B.A. Grad)

Second Survey, 1998. The responses to the 1998 survey illustrate the success of these technology program graduates. Table 3 provides details.

Table 3. Intake Category (based on previous education); descriptive statistics

	Degree	Diploma	Certificate	Some*	No*	Avg.	n
Prev. Education	18%	7%	5%	41%	29%		1052
Weeks Find Job	7	8	6	6	7	7	764
Work Hours/Wk	43	41	42	42	42	42	916
Monthly Salary	2800	3100	3000	2800	2600	2800	680
Age at Survey	30	32	30	26	24	27	920
Currently Working	89%	90%	94%	87%	87%		1052
Enrol Goal Met	91%	90%	94%	93%	91%		1038
Relatedness	93%	85%	86%	89%	87%		882
- Temporary	90%	82%	88%	87%	76%		145
- Permanent	94%	85%	89%	89%	88%		697
Usefulness	91%	88%	92%	93%	90%		925
- Temporary	90%	91%	100%	92%	84%		152
- Permanent	92%	86%	92%	93%	92%		728

*Note: Post Secondary

Means. Distributions are relatively normal for the Age, Salary, Work Week and Finding Job variables with some evidence of skewness (positive or negative leaning) and/or kurtosis (flatness). There are no statistically significant differences in the means for 'Time to Find Job' and 'Weekly Hours of Work' across the intake categories. On the other hand, there are statistically significant differences in the means for 'Monthly Salary' and 'Age'. Of some surprise is the lower salary mean of those entering with a degree compared to those entering with a diploma or certificate. While there are statistically significant differences, it can be argued that differences in salary of 200-300 dollars a month are not of practical significance.

Temporary or Permanent Work. Though salary is often the comparative variable in educational outcomes (Allen, 1998), other tests were used to control for temporary or permanent work, and for male and female variations.

Except for hours of work each week, the means for temporary/permanent or male/female differences are essentially not different. For example, salaries differ by $6 per month in favor of temporary workers. Age favors permanent workers by about a month. They also take about a week longer to find work and work about five hours more each week. Males were less likely to be doing temporary work than females (15% male to 21% female.) Females who entered with a degree were most likely to be temporary workers. Least likely to be temporary workers were males, also who entered with a degree.

Male/Female. Statistically, there are common means between males and females for the 'Age' and 'Salary' variables, but not for 'Time to Find Job' and 'Hours of Work', the opposite of the broader categories. Females tend to be slightly older

(one to two months) but they find jobs sooner (three to four) weeks. They also work three hours less a week and their salary is $115/month lower. Where there are statistically significant findings, like the 'Time to Find Job', the point is moot when most respondents found work either while still studying or within the first month following graduation.

One final confirmation of differences came through a series of tests using SPSS (V8.0) General Linear Model (GLM) - General Factorial (Norusis, 1998 p. 301-305). This procedure compares means of a dependent variable for groups (intake categories) defined in this case by sex.

- Hours of Work: no statistical significance at any intake level; males work 0.1 to 3.5 hours longer; least difference in the Diploma intake category
- Months to find Job: no stat significance at any intake level; males work 0.1 to 2.1 hours longer a week; biggest difference in the Diploma category
- Salary: stat significance in the Diploma category; males vary from $100 to $370 with largest in Certificate category; females $450 greater in Diploma
- Age: stat significance in Degree, Diploma and Certificate categories; Males vary from 0.1 to 3.6 years with biggest in Certificate category; females higher by 0.5 years in Diploma category

Skill Level. In the earlier study, only slightly more than half of the 1995 cohort respondents indicated they had the educational skills needed for gainful employment. Skill level is one of the key variables in the more broadly administered Outcomes survey. The skill level is based on the 1993 Canadian National Occupational

classification (NOC) that enriched and replaced SIC and CCDO industry and occupational classification codes.

The matrix of the NOC is based on five skill levels and nine industry categories. Four of the skill levels are mainly grounded in educational background with a unique skill level for management occupations. The nine industry categories serve to identify skill types; i.e. the fields of employment, industries, etc.

Table 4. Canadian National Occupational Classification (abbreviated). Percentages indicate survey respondents by Skill Level (left) and across Skill Types (top)

		Bus, Finance and Admin	Natural & Applied Sciences	Health	Social Sci, Govt, Edu, Religion	Art, Culture Rec'n, Sport	Sales & Service	Trades Transport & Equip	Primary Industry	Process, Utilities, Manufacturing
		25%	37%	12%	3%	5%	12%	5%	1%	2%
Mgmt	6%	-	-	-	X	-	-	-	-	-
Univ	35%	-	-	-	-	-	X	X	X	X
Coll	40%	-	-	-	-	-	-	-	-	-
HS	16%	-	X	-	X	X	-	-	-	-
No HS	2%	X	X	X	X	X	-	-	-	-

Note: 'X' denotes no classifications are made at the indicated level in the respective categories.

Skill Level (Education). Entrants with a university degree do not work in jobs at the lowest level for which only some high school is required. All other intake categories have some 20 respondents working at this level.

Skill Types (Industries). It is interesting that 1% of graduates are in the Primary Industry category, an industry beleaguered by the economic downturn in British Columbia. Also note that only the University skill level is acceptable to work in the Social Sciences, Education, Government Service & Religion sector acceptable.

Salary question responses by skill type category were received for 60-75% of those surveyed and employed. The Health field was unusual in that all of the 8 males in that category and 56 of the 60 females responded, all with $2500+ salaries. This begins to explain some of the anomaly of marginal means for females entering with a diploma, as noted earlier. Finally, 75% of both males and females in Natural Resources reported earning $2500 or more while 60% of Business (BFA) respondents reported earning less than $2500.

Discussion

There are no practically significant differences at the higher level of analysis as were expected between various intake categories. The factors of 'Time to Find Job', 'Hours of Work Week' and 'Monthly Salary' are similar regardless of intake category. Only 'Age' appeared significantly different. This is generally explained by those grads entering directly from high school or with only some post secondary education compared to those who had persisted to post secondary certification or degree levels. Salaries are highest for those entering with either a diploma or certificate. Likely the small number of respondents in these categories can explain

this outcome. Differences in each intake category became obvious after introducing the sex factor. Those for which there was statistical significance were salary and age. Age differences are explainable. Salary differences are not until the longer hours of work for males are considered. In fact, in the diploma category, males work the same hours as females, but females marginal salary means are $450 higher than males.

A very positive outcome is seeing that 82% of the grad respondents are working at a skill level at or above their level of training, with most of these in management or university level jobs. This is exceptional when considering that the educational background of 70% of the entrants had few if any post secondary credentials before enrolling.

Salary is an indicator of education success. "Income provides a finer measure of job quality -- the higher the income, the better the job" (Allen, 1998 p. 17). Salary by intake category reveals that diploma and certificate entrants led the top salary averages. Third were those with some post secondary and fourth were those entering with degrees.

Salary by skill level reveals annual salary differences are much as expected. Managers are more highly paid than those working at the university level, who in turn are more highly paid than those working at the university-college level. Those with a high school graduate background are lowest, lower by $3000 a year than those with only some high school background. The average salary of a technology diploma program graduate, in 1997 dollars, is $33,500. This compares with Table 11 (Allen, 1998) that in 1995 dollars, the post secondary certificate or diploma income value is

$29,000 and the university grad salary value is $40,000 as computed from Statistics Canada data. From the 1998 survey data, the technology diploma salary is better than salaries earned by university grads from Fine Arts, but is slightly less than salaries from Humanities and Ag/Bio, assuming equal dollar values between the different data years. These data illustrate that technology graduates in this survey are faring relatively well against university graduates at the national level.

Introducing comparisons by sex drew out more differences. Females work fewer hours per week than do males, and as a consequence, their salary is lower. Using earlier data, working the same hours per week in the Diploma category leveled the results.

Referring again to Allen's Table 11, the employers hiring technology graduates for university and management level jobs are getting a bargain. Where the average salary is about $35,000 for a technology grad at the management level and $34,000 at a university level job, the employer would expect to have to pay about $40,000 for a university grad. So while "university grads may not have found jobs by working their way down the job ladder ... the job ladder has changed ... the demand for university grads has grown as rapidly as their supply." (Allen, p.18). One could also argue that the demand is greater than the supply, and it is being met by grads from technology and other non-degree post secondary programs. When these survey data indicate 45% of the diploma grads are working at the management and university level, the facts support the argument.

Conclusions

The first study group of university graduates forms a strong notion of how their university education provided them the opportunity to improve themselves. They recognized the need for different levels of post-secondary education. They know the importance of the relatedness of their job to their field of study. They would make the same educational choices if they could choose again.

Adding the dimension of outcomes did not show many advantages for degree holding entrants in technology diploma programs, and did show the entrants with other backgrounds compare favorably:

- Degree entrants find jobs in 7 weeks; others vary from 6 to 8 weeks
- Degree entrants work 43 hours a week; others work 41 or 42 hours
- Degree entrants monthly salary of $2800 is at the average salary level; others range from $2600 to $3100
- Degree entrants and others with post secondary credentials are 32-34 years old; those without post secondary credentials are 24-27 years
- Nearly 90% of degree entrants are working; others vary from 87% to 94%
- Eighty percent of degree entrants are in permanent work; others range from 82% to 85%
- Degree entrants report the highest percentage (93%) in relatedness of education to work; others vary from 85% to 89%
- Diploma entrants rate usefulness of training in performing the job at 88%; all others rated it from 90% to 93% , and finally

- Degree entrants report 91% had met their enrolment goals; others rated it from 90% to 94%.

It is reasonable to conclude that degree entrants compare well but not always better than other entrant categories. In essence, there are no significant practical advantages based on entrant category. All entrants rate these factors more or less equally. The null hypothesis cannot be rejected. There are no differences in technology program educational outcomes based on educational background.

Significance

Using these few descriptive data and outcomes measures, the graduates from the technology institute surveyed have leveled their educational backgrounds. Regardless of their previous education, these technology diploma graduates have sought and gained employment at all skill levels.

Implications

Does this enquiry inform post-secondary education policy? The 1995 study models the recycling nature of higher education as a necessity to meet the flexible skill requirements of a changing labor market. It illustrates some graduates acquire two post-secondary credentials to successfully challenge the job market. Policy must recognize the importance of recurrent education and training to provide a means of acquiring better singular credentials, and do away with the need to achieve multiple credentials. Systems of education have a role in economic survival that demands constant evaluation for relevance and accountability. Hear the consumers.

Reference List

Allen, R. (1996). The employability of university graduates in the Humanities, Social Sciences, and Education: Recent statistical evidence. (Discussion Paper No. 98-15). Vancouver: University of British Columbia.

BCIT Report on Enrolment – Fall 1995. Burnaby: BCIT Institutional Research and Planning (unpublished).

British Columbia Council on Admissions & Transfer. (1988). Access to advanced education and job training in British Columbia. Victoria: Ministry of Advanced Education.

British Columbia Council on Admissions & Transfer. (1992a). Access for equity and opportunity. Vancouver: Advanced Educational Council of British Columbia.

British Columbia Council on Admissions & Transfer. (1992b). Client survey project. Victoria: Ministry of Advanced Education.

British Columbia Labour Force Development Board. (1995). Training for What? British Columbia: Ministry of Skills, Training and Labour.

British Columbia Labour Force Development Board. (1996). Training for Whom? British Columbia: Ministry of Skills, Training and Labour.

British Columbia Ministry of Education. (1996). Charting a New Course. British Columbia: Ministry of Skills, Training and Labour.

Brown, P. & Scase, R. (1994). Higher education and corporate realities. Milton Keynes: Open University Press.

Clark, B. (1960). The open door college: A case study. New York: McGraw-Hill.

Dennison, J. (ed.) (1995). Challenge and opportunity: Canada's community colleges at the crossroads. Vancouver: University of British Columbia Press. 14-26.

Fischer, O. (1975). Study of reverse transfer students at Seminole Junior College and Valencia Community College. (ERIC Document No. ED 108717).

Foot, D. (1996). Boom, bust and echo: how to profit from the coming demographic shift. Toronto: Macfarlane Walter & Ross.

Hilton, T. and Lee, V. (1988). Student interest and persistence: Changes in the educational pipeline in the last decade. Journal of Higher Education, 59 (5), 510-526.

Inkster, K. (1997). Education after university: university graduates choose a technical education. Vancouver: University of British Columbia.

McArthur, A. (1997). Legitimation of Applied Knowledge: the creation of a Bachelor of Technology degree at BCIT. University of British Columbia. iii-4.

Mitchell, G. (1984). The reverse transfer, lateral transfer and first time community college student: A comparative study. (ERIC Documents No. ED 245 748).

Norusis, M. (1998). SPSS 8.0 guide to data analysis. New Jersey: Prentice-Hall

OECD. (1985). Education in modern society. Paris: OECD.

Rendon, L. and Nora, A. (1988). Hispanic students: stopping the leaks in the pipeline. Educational Record, 68 (4), 79-85.

Renkiewicz, N. and others. (1982). The reverse transfer student: An emerging population (preliminary draft). (ERIC Document No. ED 223 308).

Rooth, S. (1979). The reverse transfer student at Northampton County Area Community College. (ERIC Document No. ED 178 122).

Silver, H. and Silver, P. (1997). Students: changing roles, changing lives. London: SRHE and Open University Press. p. 1.

Temple, R. (1978). Reverse articulation and 4 + 2. Community and Junior College Journal 48:36-37, September 1978.

Vaala, L. (1993). Student persistence: An update on student mobility from four-year to two-year institutions in Alberta, Canada. Community College Review, 20 (5), 37-49.